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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SAN DIEGO, CA 92121

EXAMINER

LI, SHI K

ART UNIT	PAPER NUMBER
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2613

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/677,590	Applicant(s) SPIVEY ET AL.	
	Examiner Shi K. Li	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,9-13,16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,9-13,16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 6, 11-13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang et al. (U.S. Patent Application Pub. 2005/0071484 A1) in view of Hoang et al. (U.S. Patent Application Pub. 2004/0246896 A1), Mori et al. (K. Mori et al., "Supercontinuum Lightwave Source Generating 50 GHz Spaced Optical ITU Grid Seamlessly Over S-, C- and L-Bands", Electronics Letter, 20th March 2003), Sirat et al. (U.S. Patent Application Pub. 2004/0208644 A1) and Sanice et al. (U.S. Patent 7,058,296 B2).

Regarding claims 1 and 17, Kang et al. discloses in FIG. 16 a large WDM mesh network with 28 nodes. Kang et al. suggests in paragraph [0009] using fiber for connecting the nodes. Kang et al. teaches in paragraph [0067] capacity allocation algorithm. The differences between Kang et al. and the claimed invention are (a) Kang et al. does not teach 250 area code nodes, (b) Kang et al. does not teach 15,000 GHz per fiber, (c) Kang et al. does not teach explicitly that the algorithm is executed by processor, (d) Kang et al. does not teach optical signal generator and (e) Kang does not teach utilizing a requirements matrix and an allocation matrix in the routing algorithm.

Regarding item (a), it is well known in the art that the North America has more than 250 area codes. Kang et al. shows a simplified network representing the U.S. continent with 28 nodes. It is understood that the real network contains more than 28 nodes. It is also obvious to one of ordinary skill in the art to extend the network to have at least 250 area codes to cover the

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U.S. territory to provide a nation-wide communication network because the U.S. is a united country.

Regarding item (b), Mori et al. teaches a supercontinuum (SC) lightwave source. Mori et al. teaches on page 544, last paragraph that the SC source emits a 50 GHz spacing optical multicarrier on the ITU grid over a seamless spectral range from 1425 (210 THz) to 1675 nm (179 THz). That is, the bandwidth is 31,000 GHz per fiber, with over 600 spaced apart wavelength channels. One of ordinary skill in the art would have been motivated to combine the teaching of Mori et al. with the WDM mesh network of Kang et al. because using the large bandwidth of a fiber enables the network to cover a large number of users with high quality of services. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the large bandwidth of a fiber, as taught by Mori et al., in the WDM mesh network of Kang et al. because using the large bandwidth of a fiber enables the network to cover a large number of users with high quality of services.

Regarding item (c), Hoang et al. teaches setting up lightpath in an optical network. Hoang et al. teaches in paragraph [0011] that a lightpath is a path in an optical network for which the lambda (i.e., wavelength) does not change. Hoang et al. teaches in paragraph [0013] that an optical network device (i.e., a node) contains optical crossconnect and microprocessor for controlling the crossconnect and executing software such as routing algorithms. One of ordinary skill in the art would have been motivated to combine the teaching of Hoang et al. with the modified WDM mesh network of Kang et al. and Mori et al. because a microprocessor can performs huge number of calculation and is suitable for executing algorithms. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a

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processor for executing algorithms, as taught by Hoang et al., in the modified WDM mesh network of Kang et al. and Mori et al. because a microprocessor can performs huge number of calculation and is suitable for executing algorithms.

Regarding item (d), Sirat et al. teaches in FIG. 1 radiation source and passive optical splitter for splitting and shifting a carrier wavelength for generating sub-carriers and modulate each sub-carrier with user data. Sirat et al. teaches in paragraph [0124] that the bandwidth of each sub-carrier channel is between 1 GHz and 10 GHz. Sirat et al. teaches in FIG. 9 a plurality of such radiation sources. Sirat et al. teaches in paragraph [0121] electro-optic modulators. Sirat et al. teaches in paragraph [0008] to use narrow-band tunable filter for separating desirable wavelength channel from other channels. One of ordinary skill in the art would have been motivated to combine the teaching of Sirat et al. with the modified WDM mesh network of Kang et al., Mori et al. and Hoang et al. because the scheme of Sirat et al. allows several users to share a standard wavelength channel and, therefore, reduce the cost for each user. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use narrow-band tunable filter for separating desirable wavelength channel from other channels, as taught by Sirat et al., in the modified WDM mesh network of Kang et al., Mori et al. and Hoang et al. because a tunable filter can be tuned to receive different channels at different time and facilitates dynamic lightpath setup.

Regarding item (e), Saniee et al. teaches in FIG. 2 a routing algorithm with demand matrix 40 and wavelength channel assignment 50 (equivalent to allocation matrix of instant claim). One of ordinary skill in the art would have been motivated to combine the teaching of Saniee et al. with the modified WDM network of Kang et al., Mori et al, Hoang et al. and Sirat et

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al. because using matrix allows vector computation that handles multi-variables such as multiple nodes and multiple wavelengths. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use matrix notation in routing computation, as taught by Saniee et al., in the modified WDM network of Kang et al., Mori et al., Hoang et al. and Sirat et al. because using matrix allows vector computation that handles multi-variables such as multiple nodes and multiple wavelengths.

Regarding claim 6, Sirat et al. teaches in paragraph [0008] detectors.

Regarding claim 11, Mori et al. teaches standard dense wavelength division multiplexing frequency spacing of 50 GHz.

Regarding claim 12, Sirat et al. teaches in FIG. 1 4 sub-carrier channels while the claim requires 6 wavelength communication channels. However, the Examiner recognizes that it is obvious to divide a channel into a number of subchannels using subcarrier whether the number is 4 or 6 because it amounts to a simple engineering choice.

Regarding claim 13, Sirat et al. teaches in paragraph [0124] that the bandwidth of each sub-carrier channel is between 1 GHz and 10 GHz.

Regarding claim 16, Sirat et al. teaches in paragraph [0120] electro-optic modulator and the use of coaxial cable to carry electrical signal is well known in the art.

3. Claims 9-10 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang et al., Mori et al., Hoang et al., Sirat et al. and Saniee et al. as applied to claims 1, 6, 11-13 and 16-17 above, and further in view of Mahony et al. (2004/0165889 A1) or Wood (U.S. Patent 7,088,921 B1).

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Kang et al., Mori et al., Hoang et al., Sirat et al. and Sanice et al. have been discussed above in regard to claims 1-2, 6-8, 14-21 and 27-28. The difference between Kang et al., Mori et al., Hoang et al., Sirat et al. and Sanice et al. and the claimed invention is that Kang et al., Mori et al., Hoang et al., Sirat et al. and Sanice et al. do not teach the user bandwidth. Mahony et al. teaches in FIG. 5 an access network for end users. FIG. 5 teaches that a feeder fiber (one wavelength) is connected to a power node which splits the signal into 4 for 4 ONUs and each ONU further splits signal into 8 service drops and CU cables for subtending splitters. Each subtending splitter splits signal into two. That is, a single wavelength supports around $4 \times 8 \times 2 = 64$ users. As discussed above, Sirat et al. teaches in paragraph [0124] bandwidth between 1 GHz and 10 GHz for each wavelength channel. Therefore, each user can have a bandwidth of 15 to 150 MHz. Of course, the number of users varies from place to place. Also, users can pay higher service charge and get more bandwidth. As another example, Wood teaches in FIG. 2 an access network. Wood teaches that each user is connected to the network via a 10 or 100 MHz Ethernet connection. One of ordinary skill in the art would have been motivated to combine the teaching of Mahony et al. or Wood with the modified WDM network of Kang et al., Mori et al., Hoang et al., Sirat et al. and Sanice et al. to provide a reasonable amount of bandwidth to each user in the range of 10-150 MHz depending on the service fee and number of users in the area. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to allocate a bandwidth in the range of 10-150 MHz, as taught by Mahony et al. or Wood, in the modified WDM network of Kang et al., Mori et al., Hoang et al., Sirat et al. and Sanice et al.

Response to Arguments

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4. Applicant's arguments filed 24 March 2009 have been fully considered but they are not persuasive.

The Applicant argues that none of the references contemplate an all optical network of such a large scale as presently claimed. The Examiner disagrees. Kang et al. teaches in FIG. 16 a network that covers the U.S. It is understood that each of the 28 nodes in FIG. 16 can be replaced by a sub-network, e.g., the New Jersey node can be replaced by the sub-network of FIG. 8.

5. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the algorithm is fast enough to service a kilohertz re-provisioning rate and converges rapidly in roughly 40 iterations) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The Applicant argues that "Had Applicants invention been obvious someone would have proposed it long before Applicants filed their patent application." The Examiner disagrees. First, the Applicant fails to provide evidence to show that the nationwide communication network under the contract is equivalent to the claimed invention. Second, the Applicant fails to prove that the awarding of the contract is due to the claimed invention.

The Applicant argues "Had Applicants invention been obvious someone would have proposed it long before Applicants filed their patent application." The Examiner disagrees. It is most often that people do not propose/publish something that is obvious.

Conclusion

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6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (6:30 a.m. - 4:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl

16 June 2009

/Shi K. Li/

Primary Examiner, Art Unit 2613